

PORTABLE PERSONAL COMPUTERS WITH MULTI-DIRECTIONAL INFRARED COMMUNICATION

BACKGROUND OF INVENTION

1. Field of Invention

The present invention relates to personal computers with infrared (IR) data communication capability.

2. Description of Prior Art

A number of commercially available portable personal computers, such as notebook computers or laptop computers, are provided with infrared (IR) communication ports so that data can be transmitted into the computer by infrared light signals. Typically, these ports have been located at the back or rear portion of the computer unit. Consequently, the IR electronics have been located near the back part of the computer where the input/output IR I/O connectors were located.

Recently, some notebook computers have added a second, separate IR communication port for the purpose of remote control of computer functions from in front of the computer. An example of where use of the second IR port is made is typically during presentations or demonstrations by remote control. As with home television remote control infrared control signals for computers travel by line-of-sight and are thus directional signals.

This has, however, presented problems. Typically, the computer peripherals such as the hard drive, floppy drive, battery and the like have been located in this front portion of the computer because space was available for them there. Because of this, placement of a second IR port at front portions of the computer has caused problems. A separate, special cable was required from the front-mounted second IR sensors to the IR electronics at the back part of the notebook. A separate electronics board for these front mounted IR sensors had to be mounted at the second IR port for the transmit and receive IR sensors, typically light-emitting diodes (LED's). This has thus increased the complexity and cost of units in situations where simplification and reduction of size are typically at a premium.

SUMMARY OF INVENTION

Briefly, the present invention is a new and improved personal computer system, in the preferred embodiment a portable personal computer such as a laptop or notebook computer. The computer system includes a processor and a data entry input mechanism for entry of data and processing commands or signals into the processor. The data entry input mechanism may be a keyboard, touchpad or the like.

The computer system of the present invention also includes a housing which is adapted to contain the processor. The housing also has the data input mechanism mounted on a data entry surface. An infrared light sensor is provided with the computer system for receiving infrared communication for the processor, while an infrared port is formed in the data entry surface of the housing for passage of infrared light to the infrared sensor.

The computer system of the present invention thus has an infrared port located on the same surface of the housing as the data entry mechanism. The infrared sensor is thus accessible to infrared light from the same frontal direction as data is entered into the computer system. The frontal infrared port may be the sole inlet for infrared light to the infrared sensor, or the computer system housing may have both a

frontal infrared port and the conventional, rear-mounted infrared light port as well, if desired.

When the computer system housing is provided with both frontal and rear-mounted infrared ports, a light reflective mechanism, such as a mirror, can be provided. Such a light reflective mechanism can be made movable to selectively direct incoming infrared light from one or both of the infrared ports onto the infrared sensor. In this way, only one infrared sensor and associated infrared electronics are required for the computer system.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an isometric view of a portable computer system with infrared light communication capability according to the present invention.

FIG. 2 is a simplified schematic electrical circuit diagram of the portable computer system of FIG. 1.

FIG. 3 is a top view of the notebook computer of FIG. 1.

FIG. 4 is a side elevation view, taken partly in cross-section of the notebook computer of FIG. 1.

FIG. 5 is a rear elevation view of the notebook computer of FIG. 1.

DESCRIPTION OF PREFERRED EMBODIMENT

In the drawings, a portable personal computer system C, with infrared (or IR) light communication capability according to the present invention is shown. The portable computer C shown in the drawings is a laptop or notebook computer which typically includes all of the capabilities and features of a desktop unit, but is in contrast relatively light and compact. The portable computer C can be operated in a variety of locations without need for alternating current power, by utilizing its own self-contained rechargeable batteries.

A number of conventional components (FIG. 2) are used in the computer system C. The description set forth below is exemplary of one embodiment of a portable personal computer. It should be understood that other computing configurations may be used, if desired.

The portable computer system C generally comprises for its transport container two sections 10 and 12 which are hinged together along adjacent longitudinal sides to each other at hinged connectors, such as indicated at 14 and 16. A first or base section 10 serves as a housing and includes a data entry mechanism, such as a keyboard 18 or touchpad or other data entry portion of an input/output section 20 of the computer system C. The keyboard 18 or other form of data entry mechanism permits entry of data and processing commands into the computer system C.

The housing 10 contains a processor section 22, including one or more microprocessors, and associated personal computer system components including one or more system buses 24. The processor section 22 processes the data received from the keyboard 18 according to processing commands or signals from the keyboard 18 and also operating programs stored in memory. The computer system C also includes associated power supply circuitry, including conventional rechargeable batteries. A suitable number of mass memory storage devices, such as hard disk drives 26 or the like, and peripheral ports 28 are also mounted in the housing or base section 10.

The second or top housing section 12, includes a housing 30 which contains a data display 32. The data display is visible through an opening in the top section 12 and is driven by conventional control circuitry to display data furnished